



**Massachusetts Department of Environmental Protection**  
**Bureau of Waste Prevention – Air Quality**  
**BWP AQ BACT**

**Determination of Best Available Control Technology (BACT)**  
Submit with Form CPA-FUEL and/or CPA-PROCESS, as applicable, when performing a top-down, case-by-case BACT analysis for your proposed Comprehensive Plan Application (CPA) project.

Transmittal Number \_\_\_\_\_

Facility ID (if known) \_\_\_\_\_

Per 310 CMR 7.02(8)(a), this Form is not required to be submitted if:

- The proposed project will utilize Top-Case BACT (as defined by MassDEP); or
- Emissions from the proposed project are less than 18 tons of Volatile Organic Compounds and Halogenated Organic Compounds combined, less than 18 tons of total organic material Hazardous Air Pollutants (HAPs), and/or less than 10 tons of a single organic material HAP – all tonnages being per consecutive 12-month time period – AND the project proponent proposes a combination of best management practices, pollution prevention and a limitation on hours of operation and/or raw materials usage.

See the MassDEP BACT Guidance for additional information.

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



## A. Project Information

1. Complete the table below to summarize your proposed air pollution control technology(ies)/ technique(s) to be used to deliver BACT for your proposed project, derived using a top-down BACT analysis as determined via Sections B, C, and D below:

| Table 1                                  |  |                                  |
|--|--|----------------------------------|
| Emission Unit No.(s)<br>Being Controlled | Proposed Air Pollution Control<br>Device(s)/Technique(s) | Proposed Emission(s)<br>Limit(s) |
|  |  |                                  |
|  |  |                                  |
|  |  |                                  |

## B. Air Pollution Control Technology/Technique Options

Complete the table beginning on the next page for available, demonstrated in use, air pollution control technologies/techniques for this proposed project. List in order of lowest to highest resulting air contaminant(s) emissions.

To ensure a sufficiently broad and comprehensive search of control alternatives, sources other than the U.S. Environmental Protection Agency (EPA) RACT/BACT/LAER Clearinghouse database should be investigated and documented.

Copy and complete Table 2 as needed for your top options. Do not include any air pollution control technologies/techniques that result in higher air contaminant emissions than the technology/technique you are proposing.

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**B. Air Pollution Control Technology/Technique Options** (continued)

| Table 2  |           |           |           |
|--|-----------|-----------|-----------|
|  | Option 1: | Option 2: | Option 3: |
| <b>Description of Available Air Pollution Control Technologies/Techniques</b>  |           |           |           |
| <b>Pollutant(s) Controlled<sup>1</sup></b><br>(e.g. PM, NO <sub>x</sub> , CO, SO <sub>2</sub> , VOC, HAP)  |           |           |           |
| <b>Potential Emissions Before Control</b><br>(Pounds Per Hour, Pounds Per Million British Thermal Units, or Parts Per Million, Dry Volume Basis) |           |           |           |
| <b>Resulting Emissions After Control</b><br>(Pounds Per Hour, Pounds Per Million Btu, or Parts Per Million, Dry Volume Basis)                    |           |           |           |
| <b>Annualized Cost in U.S. Dollars Per Ton of Pollutant Removed<sup>2</sup></b>  |           |           |           |

<sup>1</sup> NO<sub>x</sub> = nitrogen oxides, SO<sub>2</sub> = sulfur dioxide, VOC = volatile organic compounds, HAP = hazardous air pollutant, PM = particulate matter, CO = carbon monoxide

<sup>2</sup> Complete Section C of this Form to determine annualized costs.

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**C. Annualized Cost Analysis**

Complete the table below for each air pollution control technology/technique being evaluated for this proposed project. Whenever possible, use vendor quotes. Do not complete this table for those air pollution control technologies/techniques that result in higher air contaminant emissions than those you are proposing.

| Table 3  |          |          |          |
|--|----------|----------|----------|
|  | Option 1 | Option 2 | Option 3 |
| <b>Total Capital Investment (TCI)</b>                      |          |          |          |
| <b>Direct Purchase Cost</b>                                |          |          |          |
| 1. Primary Control Device & Auxiliary Equipment            | \$       | \$       | \$       |
| 2. Fans  | \$       | \$       | \$       |
| 3. Ducts   | \$       | \$       | \$       |
| 4. Other – Specify:  | \$       | \$       | \$       |
| 5. Instrumentation/Controls                                | \$       | \$       | \$       |
| <b>Indirect Capital Cost</b>                               |          |          |          |
| 6. Construction  | \$       | \$       | \$       |
| 7. Labor   | \$       | \$       | \$       |
| 8. Sales Taxes   | \$       | \$       | \$       |
| 9. Freight Charges   | \$       | \$       | \$       |
| <b>Engineering/Planning</b>                                |          |          |          |
| 10. Contracting Fees                                       | \$       | \$       | \$       |
| 11. Testing  | \$       | \$       | \$       |
| 12. Supervision  | \$       | \$       | \$       |
| 13. Total Capital Investment (Add 1 Through 12)            | \$       | \$       | \$       |
| 14. Annualized Capital Cost: $C[i(1+i)^n]/[(1+i)^n - 1]^*$ | \$       | \$       | \$       |

\*  $C$  = Total Capital Investment (Line 13)  $i$  = Interest Rate (Assume 10%)  $n$  = Life of Equipment (Assume 10 Years or Less)



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**C. Annualized Cost Analysis** (continued)

| Table 3 (Continued)   |          |          |          |
|---|----------|----------|----------|
|   | Option 1 | Option 2 | Option 3 |
| <b>Annual Operating &amp; Maintenance Costs</b>                                 |          |          |          |
| <b>Direct Operating Cost</b>  |          |          |          |
| 15. Labor   | \$       | \$       | \$       |
| 16. Maintenance   | \$       | \$       | \$       |
| 17. Replacement Parts   | \$       | \$       | \$       |
| <b>Indirect Cost</b>  |          |          |          |
| 18. Property Taxes*   | \$       | \$       | \$       |
| 19. Insurance   | \$       | \$       | \$       |
| 20. Fees  | \$       | \$       | \$       |
| 21. Total Annual Operating Costs (Add 15 Through 20)                            | \$       | \$       | \$       |
| <b>Energy Cost</b>  |          |          |          |
| 22. Annual Electrical Energy Expense  | \$       | \$       | \$       |
| 23. Annual Auxiliary Fuel Cost  | \$       | \$       | \$       |
| 24. Total Annual Energy Cost (Add 22 and 23)                                    | \$       | \$       | \$       |
| 25. Annual Waste Treatment & Disposal Costs                                     | \$       | \$       | \$       |
| 26. Miscellaneous Annual Expenses   | \$       | \$       | \$       |
| 27. Annual Resource Recovery & Resale   | \$       | \$       | \$       |
| 28. Total Annualized Control Costs<br>(14+21+24+25+26) - 27                     | \$       | \$       | \$       |
| 29. Amount of Pollutant Controlled Over Baseline<br>Emissions** (Tons Per Year) |          |          |          |
| 30. Cost of Control (Dollars Per Ton)<br>(Divide 28 By 29)                      | \$       | \$       | \$       |

\*State and federal law may provide for certain tax exemptions and special loans for the purchase of control equipment. Contact the Massachusetts Industrial Finance Agency (MIFA) or Federal Small Business Association (SBA).

\*\* Baseline Emissions are essentially uncontrolled emissions, calculated using realistic upper boundary operating assumptions.



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### D. Option Feasibility

Complete the table below to summarize the basis for elimination of each of the air pollution control technologies/techniques used to determine BACT for your proposed project:

| Table 4  |  |
|--|--|
| Description of Air Pollution Control Technology/Technique Option | Explain the Basis for Elimination <sup>1</sup> |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

<sup>1</sup> **Note:** BACT is defined as an emission limitation based on the maximum degree of reduction of any regulated air contaminant emitted from or which results from any regulated facility which MassDEP, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable. Explanations will be based upon the following:

**Technical Reasons.** Must specifically state the reason(s) why the option is not technically feasible and specifically why the option cannot be modified to accommodate the proposed emission unit(s).

**Economic Reason.** Final determination will be based on U.S. Environmental Protection Agency methods or other methods approved by MassDEP.

**Other Reasons.** Must specifically state the reason(s) why the option is not feasible and specifically why the option cannot be modified to accommodate the proposed emission unit(s).

### E. Professional Engineer's Stamp

The seal or stamp and signature of a Massachusetts Registered Professional Engineer (P.E.) must be entered below. Both the seal or stamp impression and the P.E. signature must be original. This is to certify that the information contained in this Form has been checked for accuracy, and that the design represents good air pollution control engineering practice.

\_\_\_\_\_  
P.E. Name (Type or Print)

\_\_\_\_\_  
P.E. Signature

\_\_\_\_\_  
Position/Title

\_\_\_\_\_  
Company

\_\_\_\_\_  
Date (MM/DD/YYYY)

\_\_\_\_\_  
P.E. Number

Place P.E. Seal or Stamp Here.



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**F. Certification by Responsible Official**

The signature below provides the affirmative demonstration pursuant to 310 CMR 7.02(5)(c)8 that any facility(ies) in Massachusetts, owned or operated by the proponent for this project (or by an entity controlling, controlled by or under common control with such proponent) that is subject to 310 CMR 7.00, et seq., is in compliance with, or on a MassDEP approved compliance schedule to meet, all provisions of 310 CMR 7.00, et seq., and any plan approval, order, notice of noncompliance or permit issued thereunder. This Form must be signed by a Responsible Official working at the location of the proposed new or modified facility. Even if an agent has been designated to fill out this Form, the Responsible Official must sign it. (Refer to the definition given in 310 CMR 7.00.)

**I certify that I have personally examined the foregoing and am familiar with the information contained in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including possible fines and imprisonment.**

Responsible Official Name (Type or Print)

Responsible Official Signature

Responsible Official Title

Responsible Official Company/Organization Name

Date (MM/DD/YYYY)

This Space Reserved for  
MassDEP Approval Stamp.